

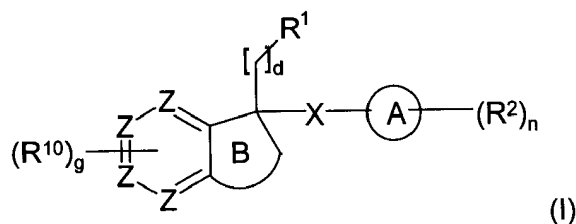
Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

In the Claims:

What is claimed is:

1. (Currently Amended) A compound of formula (I)



or pharmaceutically acceptable derivatives thereof, wherein:

X is a C₁₋₅ alkylene chain having 0 heteroatoms, wherein said X is optionally substituted by one or more =O, =S, -S(O)_r, alkyl, or halogen; ~~and wherein said C₁₋₅ alkylene chain may optionally have 0-3 heteroatoms selected from oxygen, phosphorus, sulfur, or nitrogen;~~

Ring A is ~~a saturated, partially saturated, or aromatic 3-7 monocyclic or an 8-10~~ 8-10 8-membered bicyclic ring having one ring nitrogen and ~~0-4 additional heteroatoms selected from oxygen, phosphorus, sulfur, or nitrogen;~~

Ring B is a ~~4-7~~ 5- membered saturated, partially saturated, or aromatic carbocyclic ring optionally containing one or two heteroatoms selected from oxygen, phosphorus, sulfur, ~~or~~ and nitrogen;

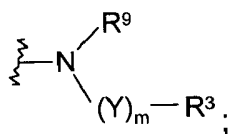
each Z may be is carbon; ~~or nitrogen, provided that at least one Z is carbon;~~

R¹ is ~~selected from the group consisting of~~

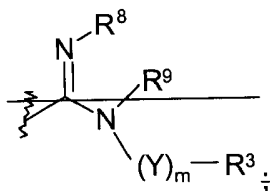
~~(a) a saturated, partially saturated, or aromatic 4-7 monocyclic or 8-10 membered bicyclic ring having one ring nitrogen and 0-4 additional heteroatoms~~

~~selected from oxygen, phosphorus, sulfur, or nitrogen, optionally attached through a C₁₋₆ alkylene chain, and optionally substituted by one or more R⁸;~~

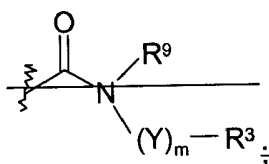
(b)



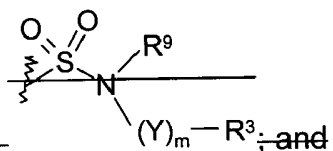
_____(c)



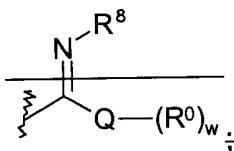
(d)



(e)



(f)



_____~~Q is carbon, oxygen, or S(O)_i;~~

_____~~w is 1 or 2;~~

each R² is independently selected from the group consisting of -OR⁰, -C(O)-R⁰, -S(O)₂-R⁰, -C(O)-N(R⁰)₂, -S(O)₂-N(R⁰)₂, -(CH₂)_a-N(R⁰)(-V_b-R⁺), -(CH₂)_a-(-V_b-R⁺),

halogen, alkyl optionally substituted by one or more R^7 , alkenyl optionally substituted by one or more R^7 , alkynyl optionally substituted by one or more R^7 , aryl optionally substituted by one or more R^6 , heteroaryl optionally substituted by one or more R^6 , cycloalkyl optionally substituted by one or more R^8 , and heterocyclyl optionally substituted by one or more R^8 ; and two adjacent R^2 s on Ring A are optionally taken together to form a fused, saturated, partially saturated or aromatic 5-6 membered ring having 0-3 heteroatoms selected from oxygen, phosphorus, sulfur, or nitrogen; or two geminal R^2 s are optionally taken together to form a spiro, saturated, partially saturated or aromatic 5-6 membered ring having 0-3 heteroatoms selected from oxygen, phosphorus, sulfur, or nitrogen, said fused or spiro ring being optionally substituted by one or more R^8 ;

each a independently is 0-3;

each b independently is 0 or 1;

V is $-C(O)-$, $-C(O)O-$, $-S(O)_2-$, or $-C(O)-N(R^0)-$;

R^+ is alkyl, cycloalkyl, aralkyl, aryl, heteroaryl, heteroaralkyl, or heterocyclyl, wherein said R^+ is optionally substituted by one or more R^8 ;

d is 1-3;

m is 0 or 1;

n is 0-5;

R^3 is H, $-N(R^0)_2$, $-N(R^0)C(O)R^0$, $-CN$, halogen, CF_3 , alkyl optionally substituted by one or more groups selected from R^7 or $-S$ -aryl optionally substituted by $-(CH_2)_{1-6}-N(R^0)SO_2(R^0)$, alkenyl optionally substituted by one or more groups selected from R^7 or $-S$ -aryl optionally substituted by $-(CH_2)_{1-6}-N(R^0)SO_2(R^0)$, alkynyl optionally substituted by one or more groups selected from R^7 or $-S$ -aryl optionally substituted by $-(CH_2)_{1-6}-N(R^0)SO_2(R^0)$, cycloalkyl or carbocyclyl optionally substituted by one or more R^8 , aryl optionally substituted by one or more R^6 , heteroaryl optionally substituted by one or more R^8 , or heterocyclyl optionally substituted by one or more R^6 ;

Y is alkyl, alkenyl, alkynyl, $-(CR^4R^5)_p-$, $-C(O)-$, $-C(O)C(O)-$, $-C(S)-$, $-O-(CH_2)_{0-4}-C(O)-$, $-(CH_2)_{0-4}-C(O)-O-$, $-N(R^0)-C(O)-$, $-C(O)-N(R^0)-$, $-N(R^0)-C(S)-$, $-S(O)_t-$, $-O-C(=N-CN)-$, $-O-C(=N-R^0)-$, $-C(=N-CN)-O-$, $-C(=N-CN)-S-$, $-C(=N-R^0)-O-$,

-S-C(=N-CN)-, -N(R⁰)-C(=N-CN)-, -C(=N-CN)-, -N(R⁰)-C[=N-C(O)-R⁰],
-N(R⁰)-C[=N-S(O)_t-R⁰], -N(R⁰)-C(=N-OR⁰)-, -N(R⁰)-C(=N-R⁰)-, or -C(=N-R⁰)-;

each R⁴ is independently H, alkyl optionally substituted by R⁷, alkenyl optionally substituted by R⁷, or alkynyl optionally substituted by R⁷;

each R⁵ is independently selected from H, -C(O)-OR⁶, -C(O)-N(R⁰)₂, -S(O)₂N(R⁰)₂, -S(O)₂R⁰, aryl optionally substituted by R⁶, or heteroaryl optionally substituted by R⁶;

p is 1-5;

t is 1 or 2;

each R⁶ is independently selected from the group consisting of halogen, -CF₃, -OCF₃, -OR⁰, -(CH₂)₁₋₆-OR⁰, -SR⁰, -(CH₂)₁₋₆-SR⁰, -SCF₃, -R⁰, methylenedioxy, ethylenedioxy, -NO₂, -CN, -(CH₂)₁₋₆-CN, -N(R⁰)₂, -(CH₂)₁₋₆-N(R⁰)₂, -NR⁰C(O)R⁰, -NR⁰(CN), -NR⁰C(O)N(R⁰)₂, -NR⁰C(S)N(R⁰)₂, -NR⁰CO₂R⁰, -NR⁰NR⁰C(O)R⁰, -NR⁰NR⁰C(O)N(R⁰)₂, -NR⁰NR⁰CO₂R⁰, -C(O)C(O)R⁰, -C(O)CH₂C(O)R⁰, -(CH₂)₀₋₆CO₂R⁰, -O-C(O)R⁰, -C(O)R⁰, -C(O)N(R⁰)N(R⁰)₂, -C(O)N(R⁰)₂, -C(O)N(R⁰)OH, -C(O)N(R⁰)SO₂R⁰, -OC(O)N(R⁰)₂, -S(O)_tR⁰, -S(O)_t-OR⁰, -S(O)_tN(R⁰)C(O)R⁰, -S(O)_tN(R⁰)OR⁰, -NR⁰SO₂N(R⁰)₂, -NR⁰SO₂R⁰, -C(=S)N(R⁰)₂, -C(=NH)-N(R⁰)₂, -(CH₂)₁₋₆-C(O)R⁰, -C(=N-OR⁰)-N(R⁰)₂, -O-(CH₂)₀₋₆-SO₂N(R⁰)₂, -(CH₂)₁₋₆NHC(O)R⁰, and -SO₂N(R⁰)₂ wherein the two R⁰s on the same nitrogen are optionally taken together to form a 5-8 membered saturated, partially saturated, or aromatic ring having additional 0-4 heteroatoms selected from oxygen, phosphorus, nitrogen, or sulfur;

each R⁷ is independently selected from the group consisting of halogen, -CF₃, -R⁰, -OR⁰, -OCF₃, -(CH₂)₁₋₆-OR⁰, -SR⁰, -SCF₃, -(CH₂)₁₋₆-SR⁰, aryl optionally substituted by R⁶, methylenedioxy, ethylenedioxy, -NO₂, -CN, -(CH₂)₁₋₆-CN, -N(R⁰)₂, -(CH₂)₁₋₆-N(R⁰)₂, -NR⁰C(O)R⁰, -NR⁰(CN), -NR⁰C(O)N(R⁰)₂, -N(R⁰)C(S)N(R⁰)₂, -NR⁰CO₂R⁰, -NR⁰NR⁰C(O)R⁰, -NR⁰NR⁰C(O)N(R⁰)₂, -NR⁰NR⁰CO₂R⁰, -C(O)C(O)R⁰, -C(O)CH₂C(O)R⁰, -(CH₂)₀₋₆-CO₂R⁰, -C(O)R⁰, -C(O)N(R⁰)N(R⁰)₂, -C(O)N(R⁰)₂, -C(O)N(R⁰)OH, -OC(O)R⁰, -C(O)N(R⁰)SO₂R⁰, -OC(O)N(R⁰)₂, -S(O)_tR⁰, -S(O)_t-OR⁰, -S(O)_tN(R⁰)C(O)R⁰, -S(O)_tN(R⁰)OR⁰, -

$\text{NR}^0\text{SO}_2\text{N}(\text{R}^0)_2$, $-\text{NR}^0\text{SO}_2\text{R}^0$, $-\text{C}(=\text{S})\text{N}(\text{R}^0)_2$, $-\text{C}(=\text{NH})-\text{N}(\text{R}^0)_2$, $-(\text{CH}_2)_{1-6}-\text{C}(\text{O})\text{R}^0$, $-\text{C}(=\text{N}-\text{OR}^0)-\text{N}(\text{R}^0)_2$, $-\text{O}-(\text{CH}_2)_{0-6}-\text{SO}_2\text{N}(\text{R}^0)_2$, $-(\text{CH}_2)_{1-6}-\text{NHC}(\text{O})\text{R}^0$, and $-\text{SO}_2\text{N}(\text{R}^0)_2$ wherein the two R^0 's on the same nitrogen are optionally taken together to form a 5-8 membered saturated, partially saturated, or aromatic ring having additional 0-4 heteroatoms selected from oxygen, phosphorus, nitrogen, or sulfur;

each R^8 is independently selected from R^7 , $=\text{O}$, $=\text{S}$, $=\text{N}(\text{R}^0)$, or $=\text{N}(\text{CN})$;

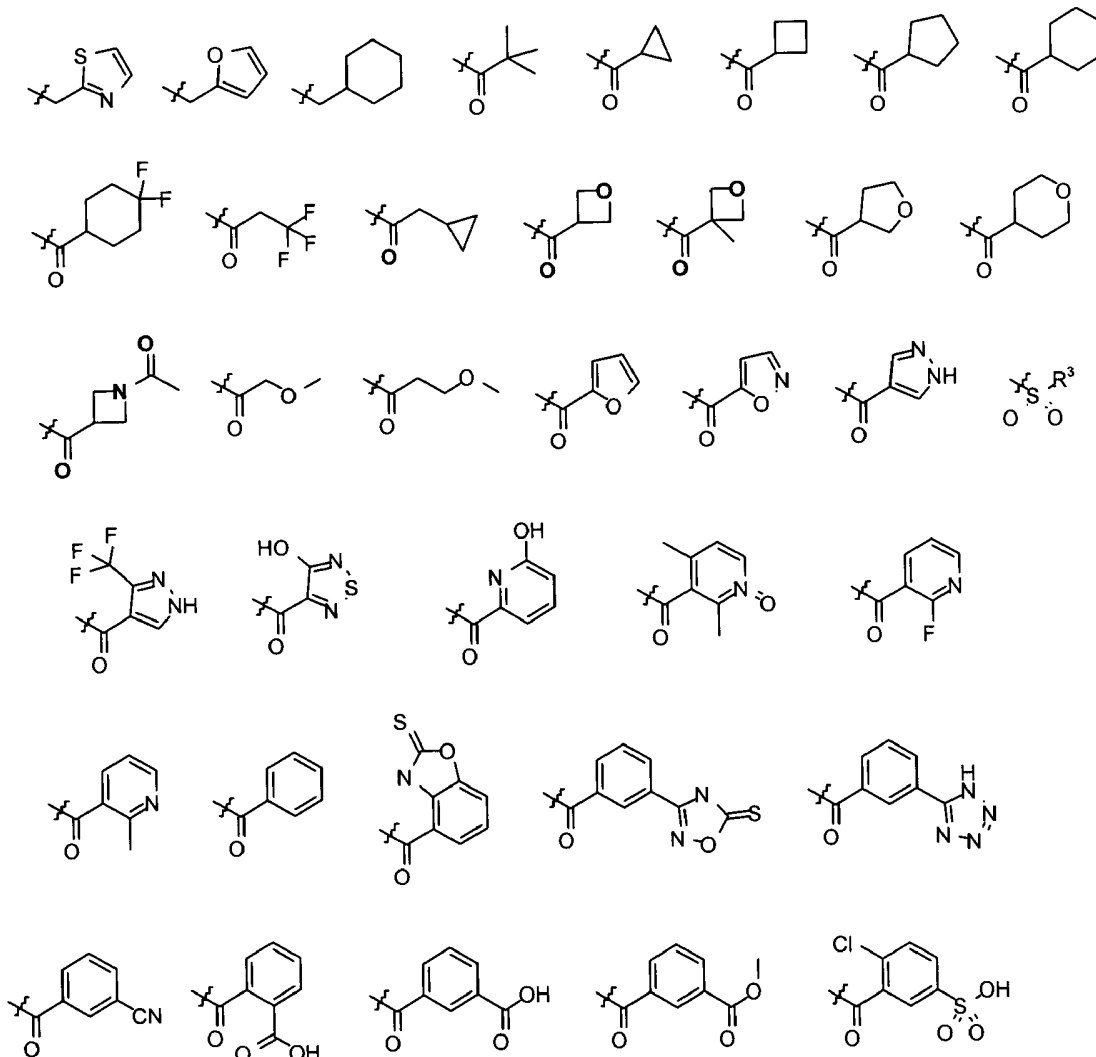
R^9 is hydrogen, alkyl optionally substituted by one or more R^7 , alkenyl optionally substituted by one or more R^7 , alkynyl optionally substituted by one or more R^7 , cycloalkyl optionally substituted by one or more R^8 , heterocyclyl optionally substituted by one or more R^8 , heteroaryl optionally substituted by one or more R^6 , or aryl optionally substituted by one or more R^6 ; $-(\text{Y})_m-\text{R}^3$ and R^9 may combine with the nitrogen atom with which they are attached to form a saturated, partially saturated, or aromatic 5-7 membered monocyclic or 8-10 membered bicyclic ring that optionally contains 1 to 3 additional heteroatoms selected from oxygen, phosphorus, nitrogen, or sulfur, wherein said ring may be optionally substituted with one or more R^8 ;

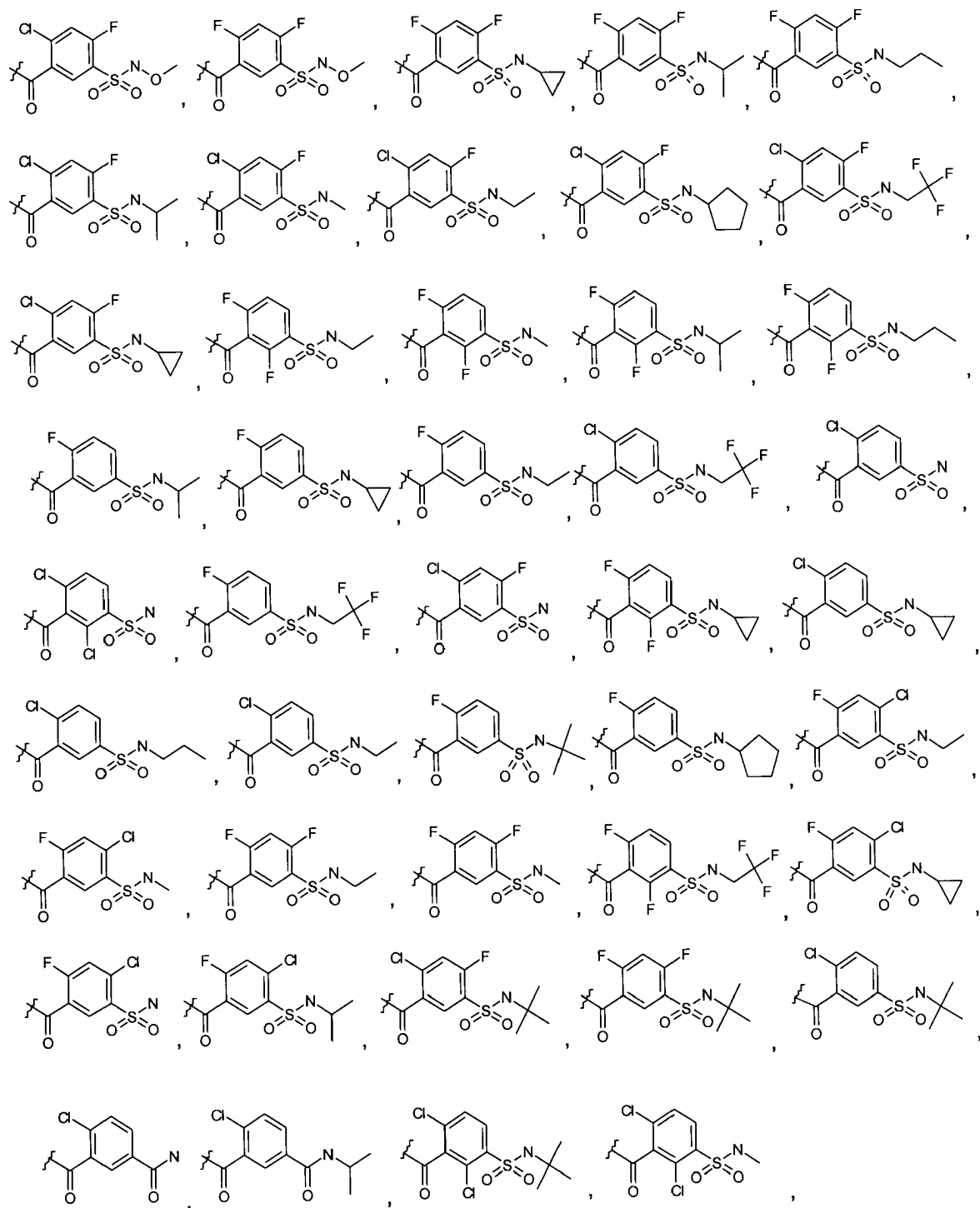
each R^{10} is R^7 or two R^{10} optionally may be taken together to form a 3-7 member saturated, partially saturated, or aromatic carbocyclic ring, optionally containing one or more heteroatom selected from oxygen, phosphorus, nitrogen, or sulfur that is fused with the depicted ring;

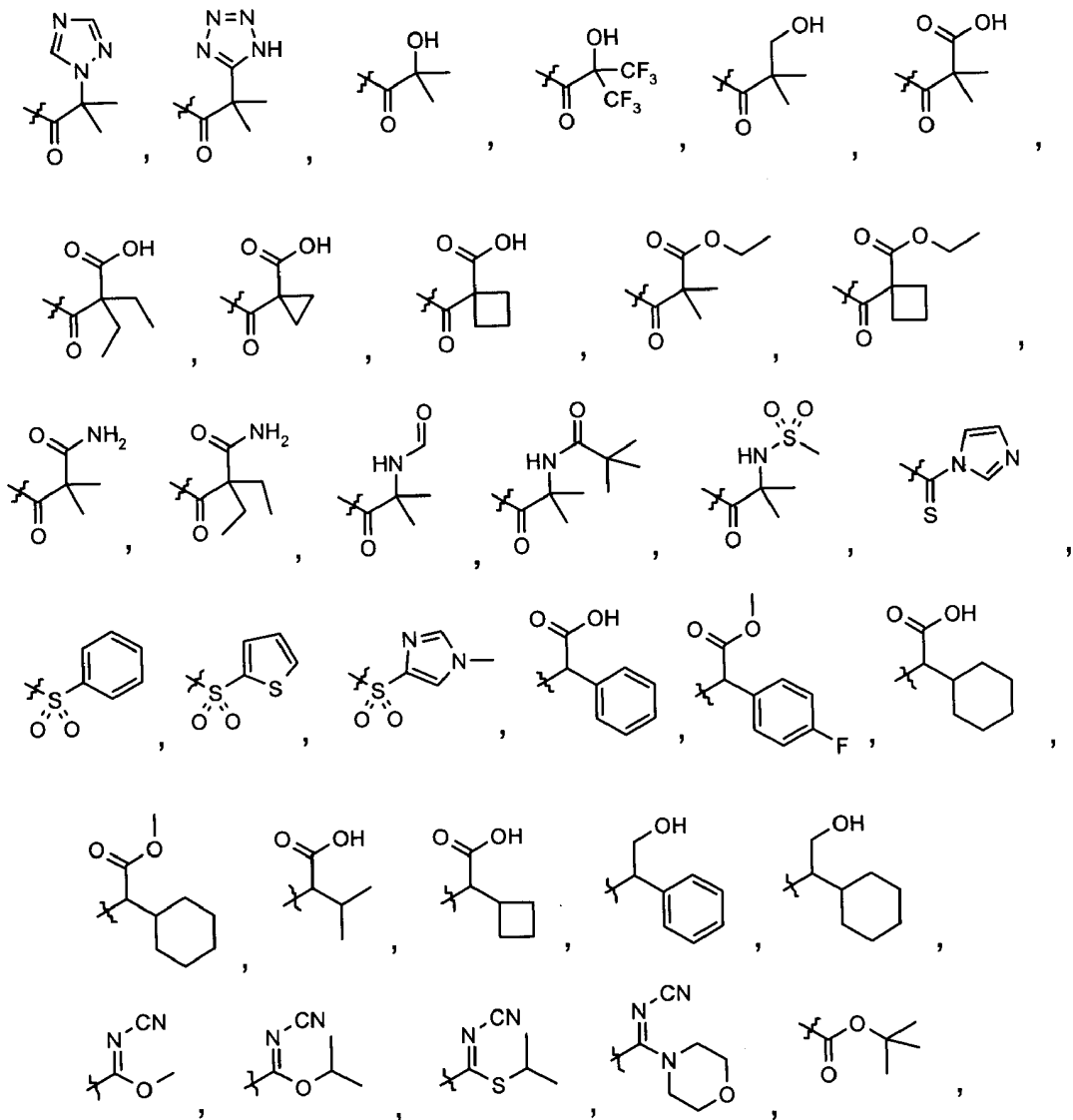
g is 0 to 4;

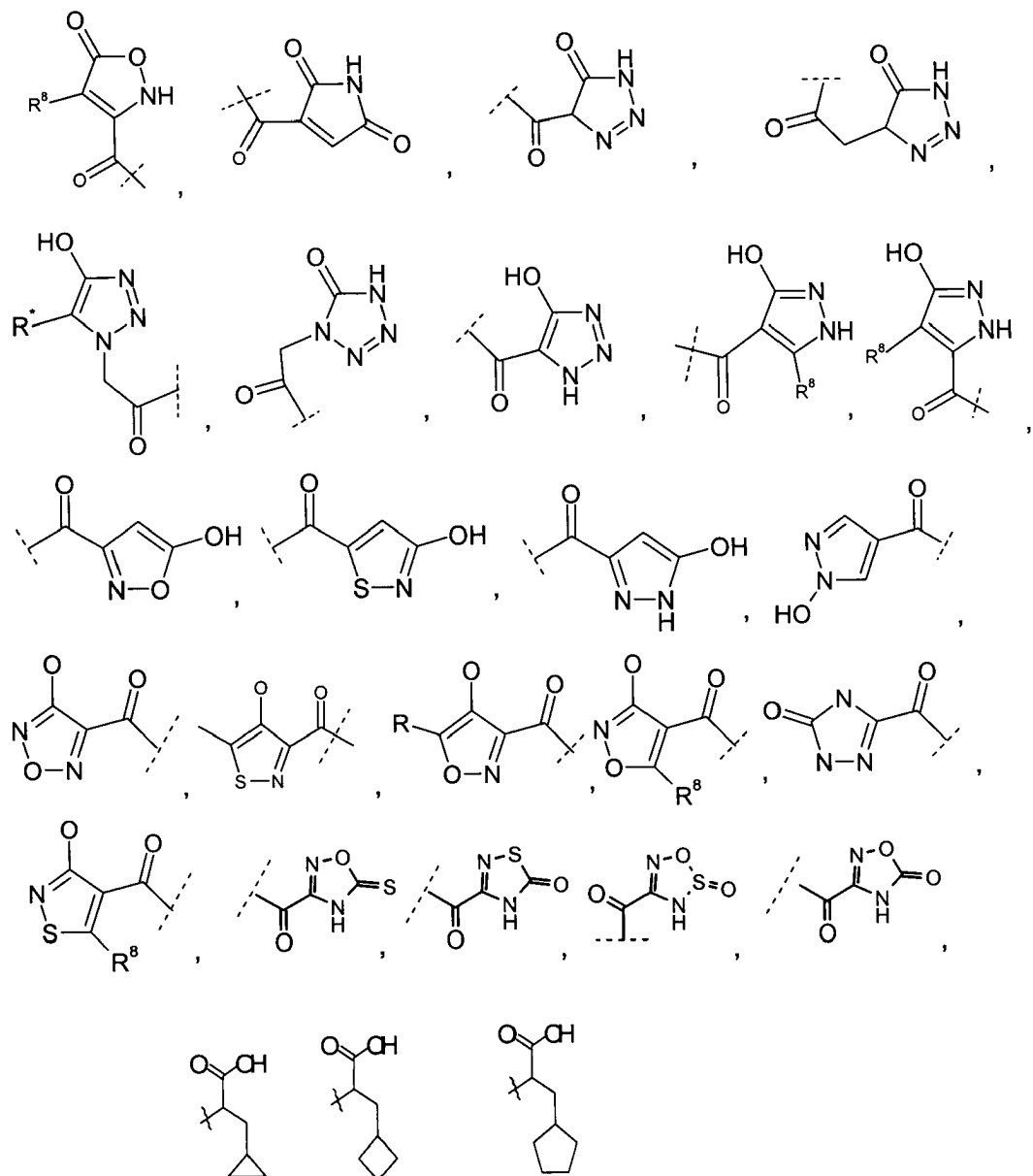
each R^0 is independently selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, carbocyclalkyl, aryl, heteroaryl, aralkyl, heteroaralkyl, heterocyclyl, and heterocyclalkyl, wherein each member of R^0 except H is optionally substituted by one or more R^* , OR^* , $\text{N}(\text{R}^*)_2$, $=\text{O}$, $=\text{S}$, halogen, CF_3 , NO_2 , CN , $-\text{C}(\text{O})\text{R}^*$, $-\text{CO}_2\text{R}^*$, $-\text{C}(\text{O})\text{-aryl}$, $-\text{C}(\text{O})\text{-heteroaryl}$, $-\text{C}(\text{O})\text{-aralkyl}$, $-\text{S}(\text{O})_t\text{-aryl}$, $-\text{S}(\text{O})_t\text{-heteroaryl}$, $-\text{NR}^*\text{SO}_2\text{R}^*$, $-\text{NR}^*\text{C}(\text{O})\text{R}^*$, $-\text{NR}^*\text{C}(\text{O})\text{N}(\text{R}^*)_2$, $-\text{N}(\text{R}^*)\text{C}(\text{S})\text{N}(\text{R}^*)_2$, $-\text{NR}^*\text{CO}_2\text{R}^*$, $-\text{NR}^*\text{NR}^*\text{C}(\text{O})\text{R}^*$, $-\text{NR}^*\text{NR}^*\text{C}(\text{O})\text{N}(\text{R}^*)_2$, $-\text{NR}^*\text{NR}^*\text{CO}_2\text{R}^*$, $-\text{C}(\text{O})\text{C}(\text{O})\text{R}^*$, $-\text{C}(\text{O})\text{CH}_2\text{C}(\text{O})\text{R}^*$, $-\text{C}(\text{O})\text{N}(\text{R}^*)\text{N}(\text{R}^*)_2$, $-\text{C}(\text{O})\text{N}(\text{R}^*)_2$, $-\text{C}(\text{O})\text{NR}^*\text{SO}_2\text{R}^*$, $-\text{OC}(\text{O})\text{N}(\text{R}^*)_2$, $-\text{S}(\text{O})_t\text{R}^*$, $-\text{NR}^*\text{SO}_2\text{N}(\text{R}^*)_2$, and $-\text{SO}_2\text{N}(\text{R}^*)_2$

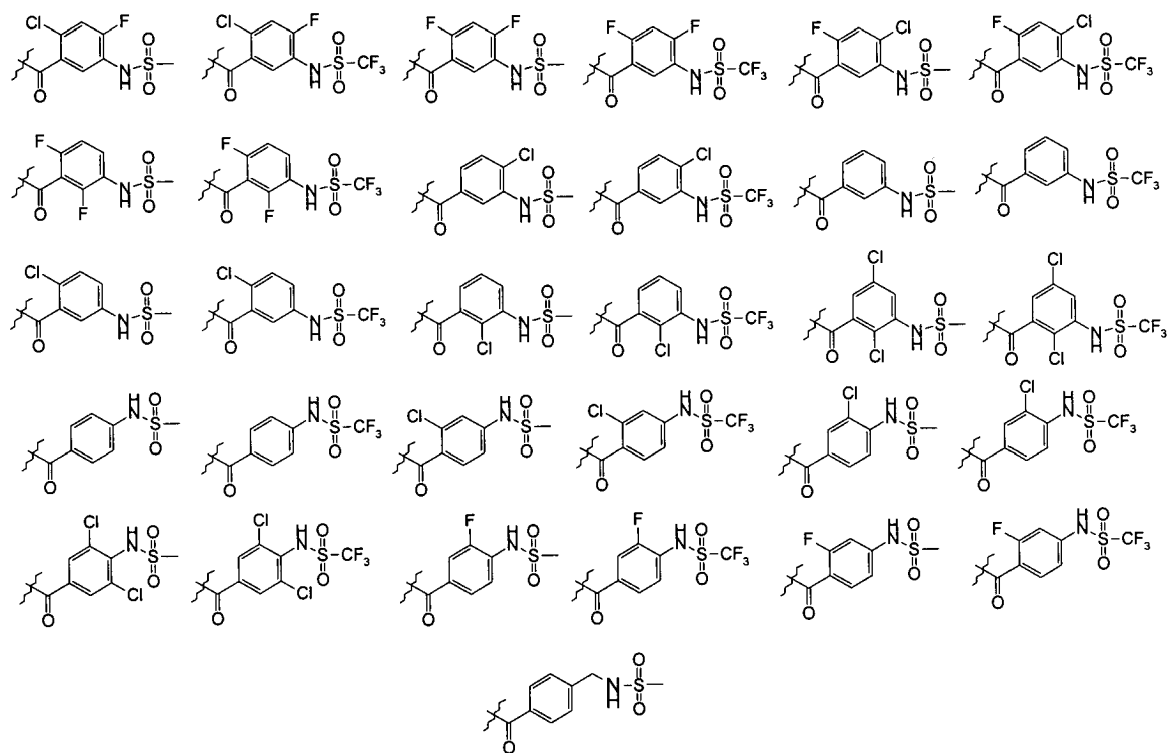
6. (Currently Amended) The compound of claim 2 1 wherein $-(Y)_m-R^3$ is selected from the group consisting of





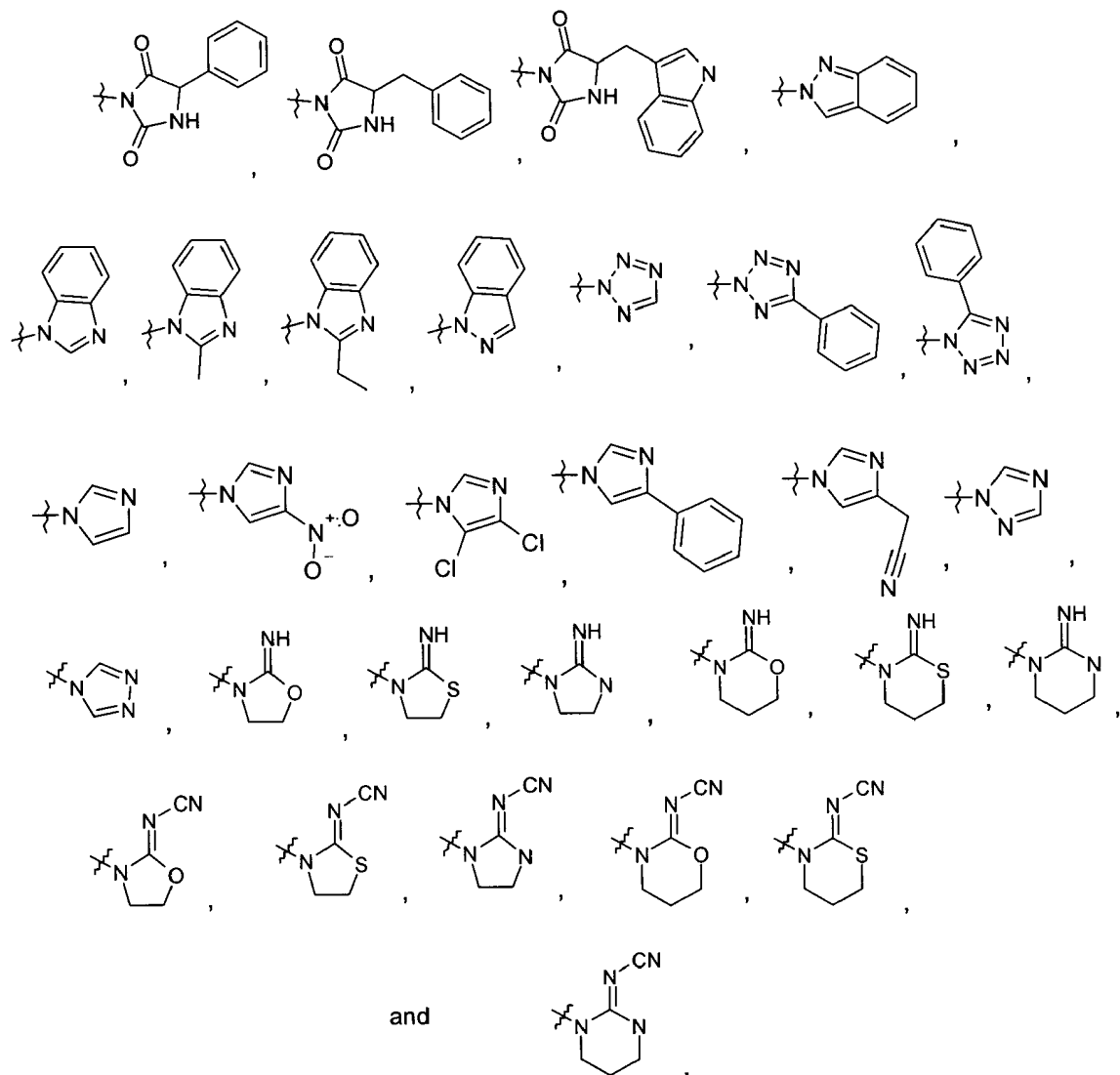






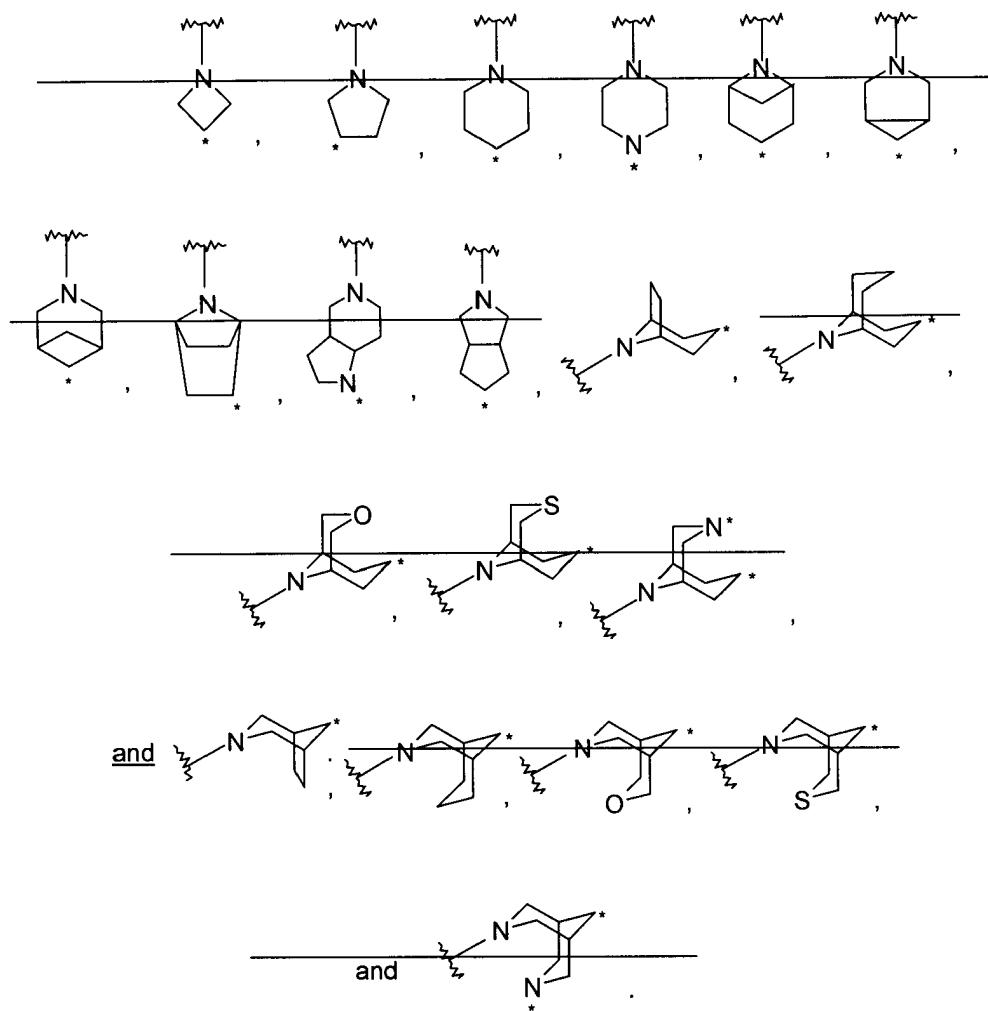
and

7. (Original) The compound of claim 1 wherein $-(Y)_m-R^3$ and $-R^9$ combine with the nitrogen atom to which they are attached to form a moiety selected from the group consisting of

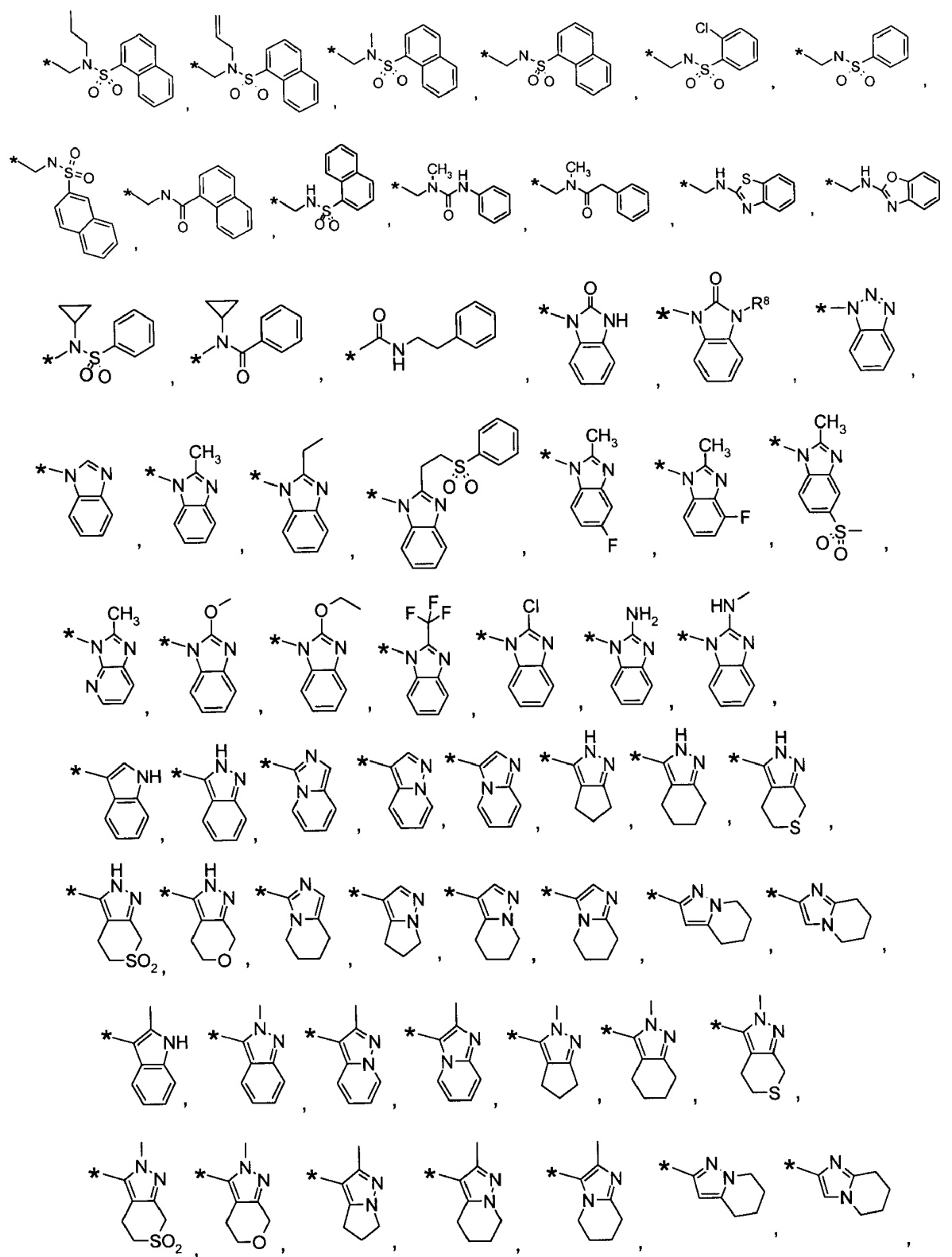


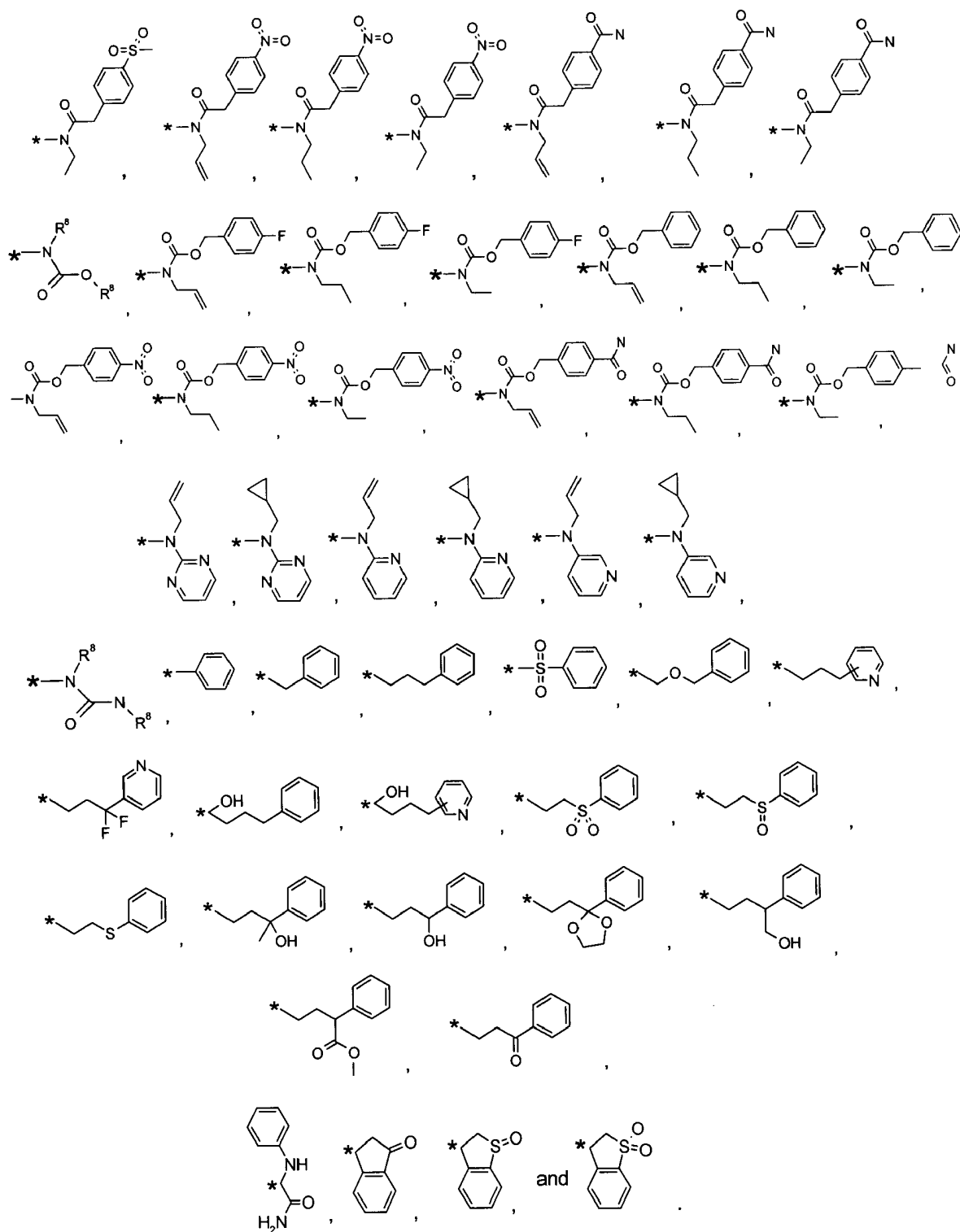
8. (Cancelled)
9. (Original) The compound of claim 1 wherein X is $-(CH_2)-$, $-(CH_2-CH_2)-$, or $-(CH_2-CH_2-CH_2)-$.
10. (Original) The compound of claim 9 wherein X is optionally substituted by one or more halogen or oxo.
11. (Cancelled)

12. (Currently Amended) The compound of claim 1 wherein the A ring is selected, with the asterisk indicating a point of optional further substitution is selected from the group consisting of



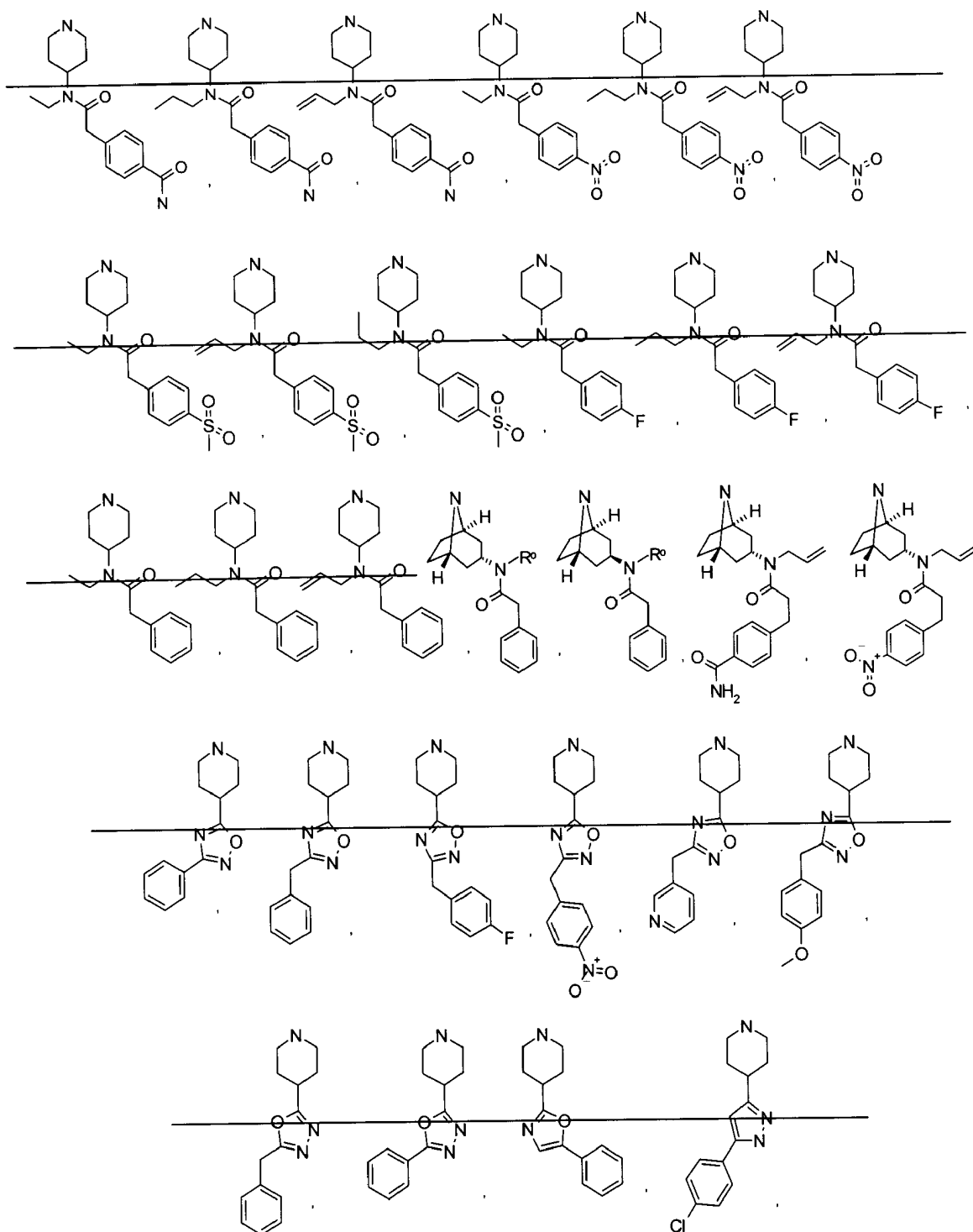
13. (Original) The compound of claim 12 wherein each R^2 , with an asterisk indicating a point of substitution from Ring A, independently is selected from the group consisting of

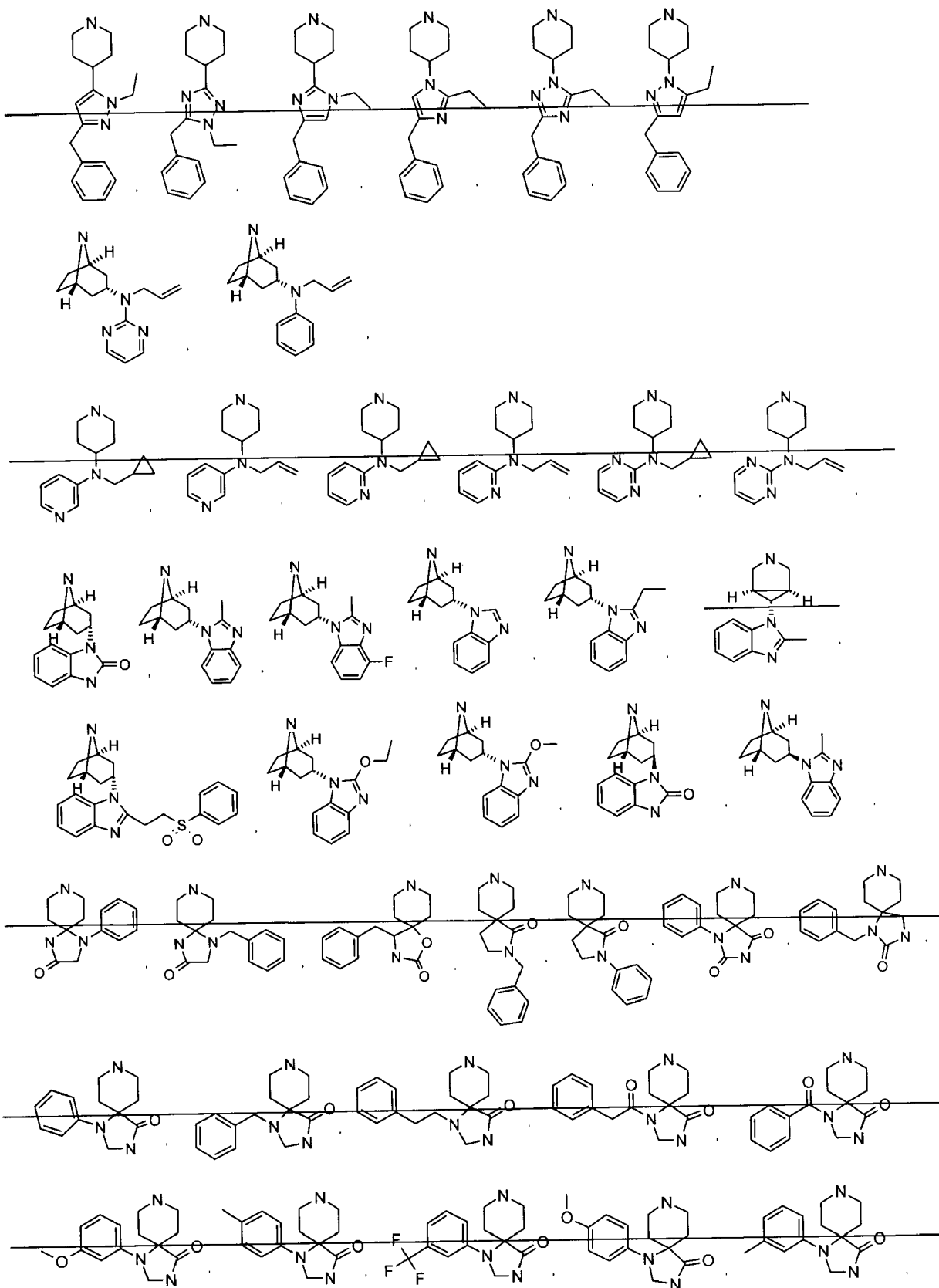


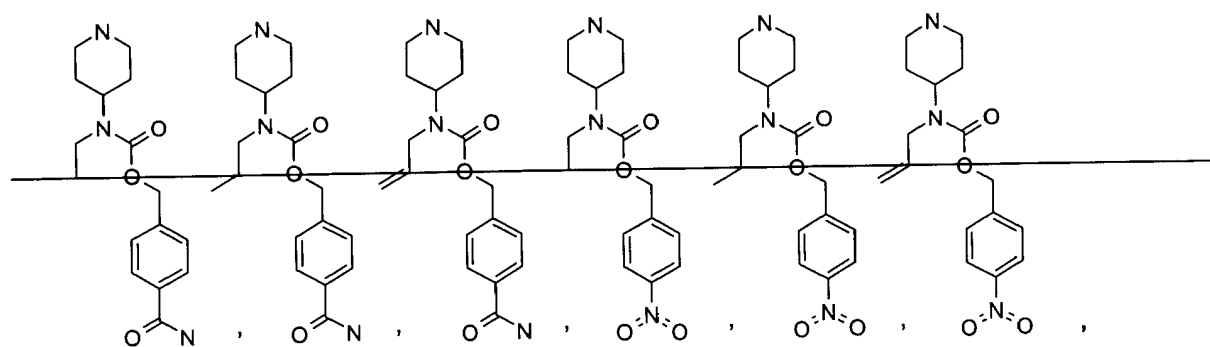


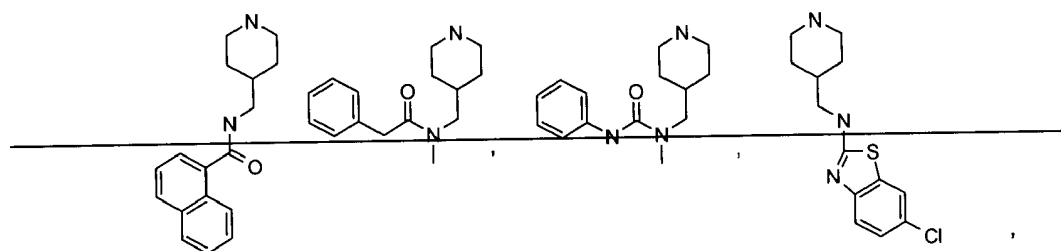
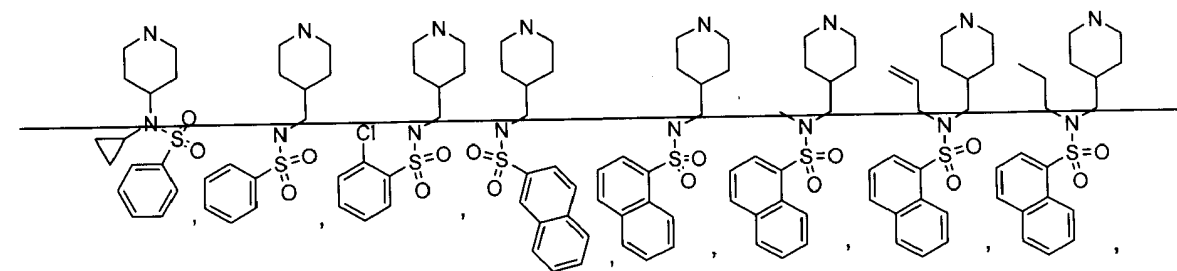
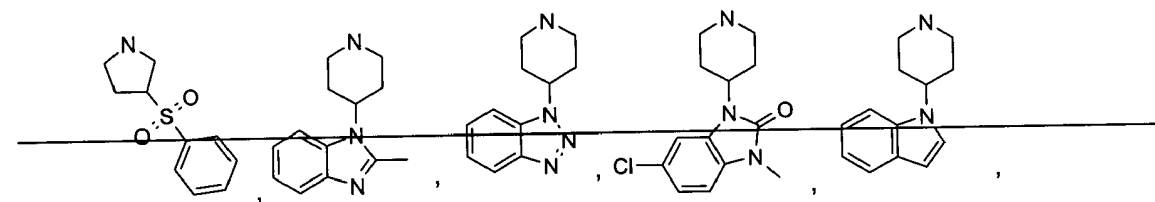
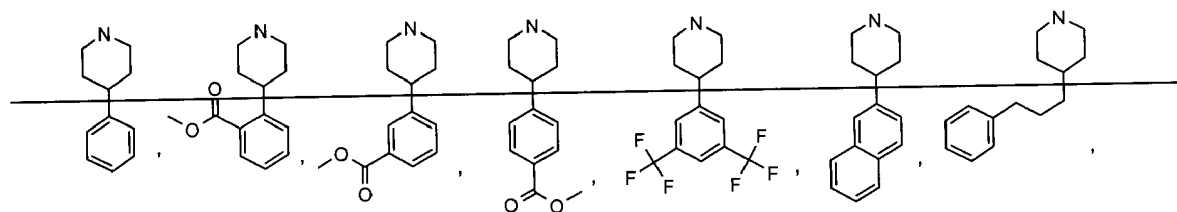
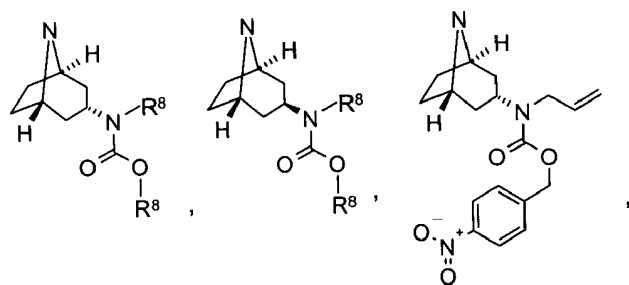
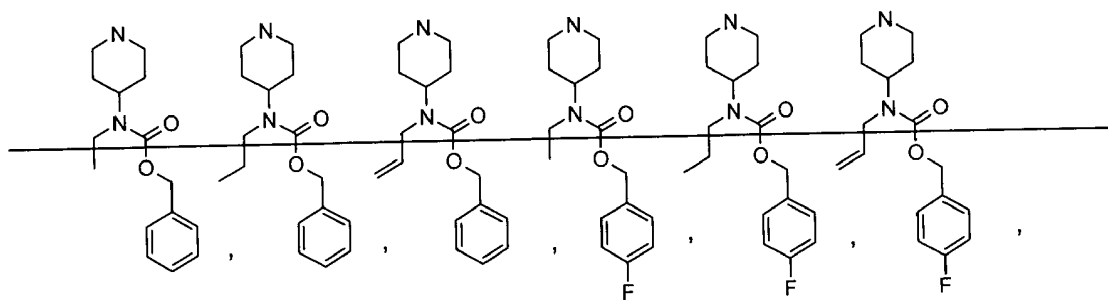
14. (Cancelled)
15. (Currently Amended) The compound of claim 1 wherein the A ring is tropane or piperidine, either optionally substituted with one or more R².
16. (Currently Amended) The compound of claim 15 wherein the A ring is an unsubstituted tropane.

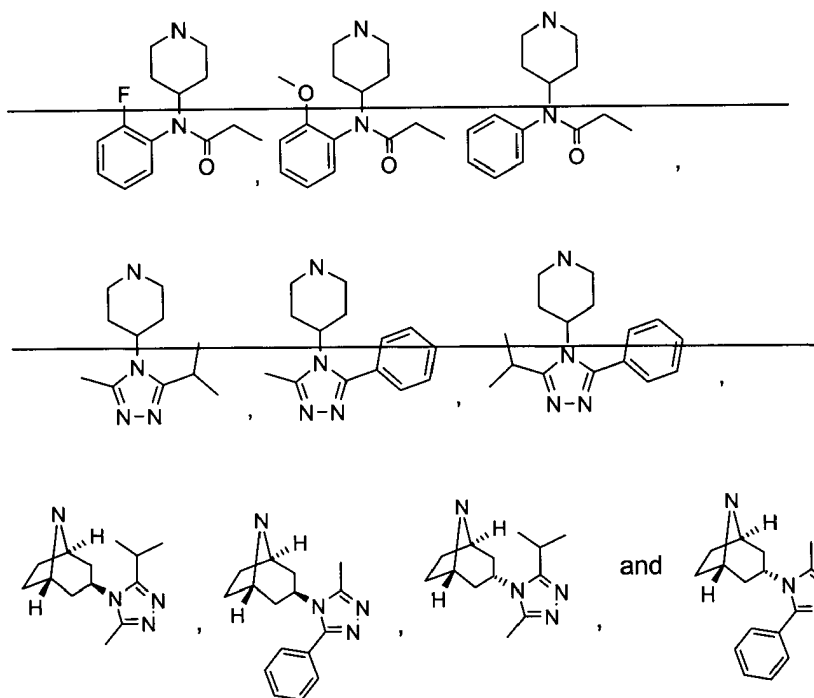
17. (Currently Amended) The compound of claim 15 wherein the A ring in combination with R² is











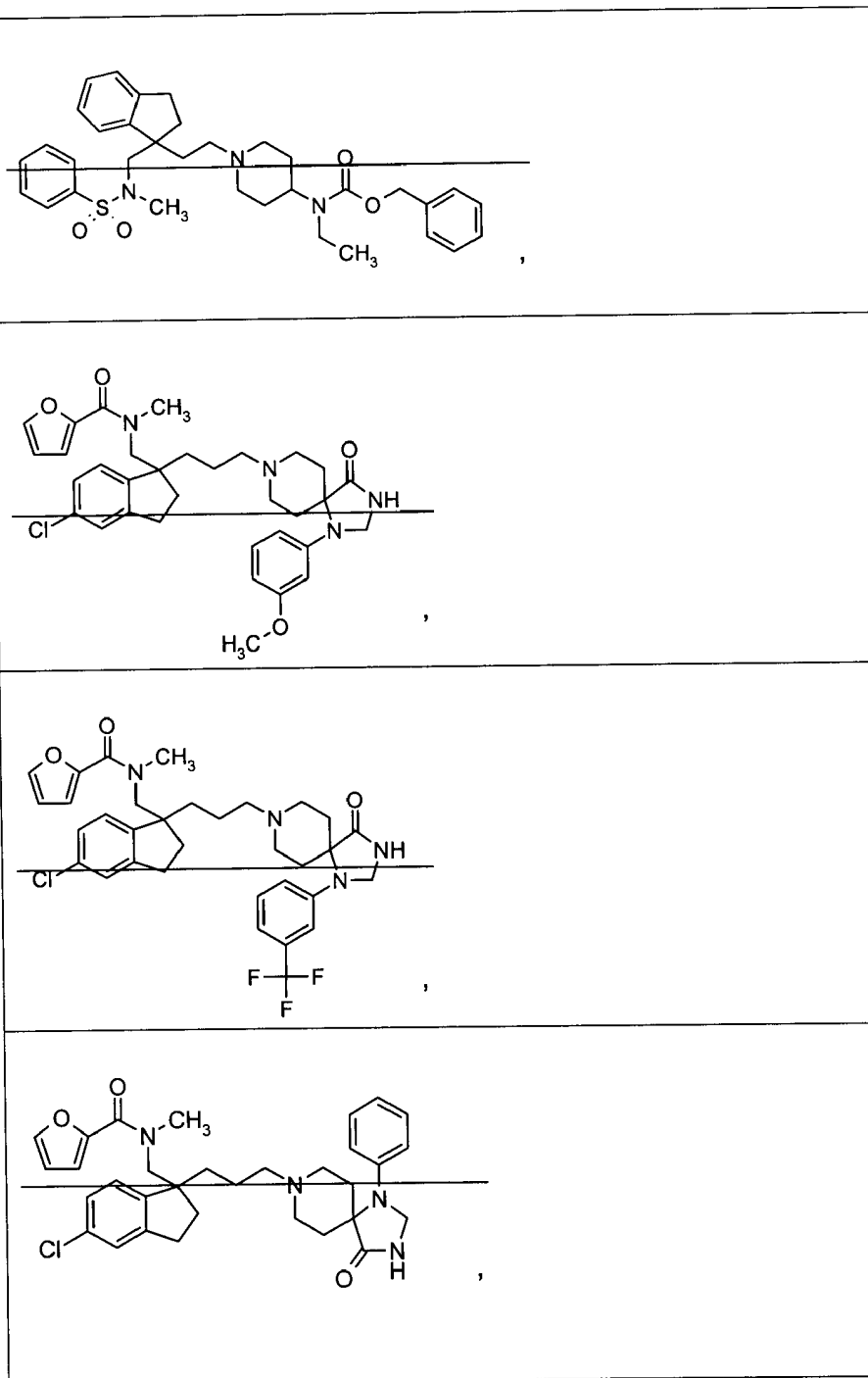
18. (Original) The compound of claim 15 wherein the tropane is endo.

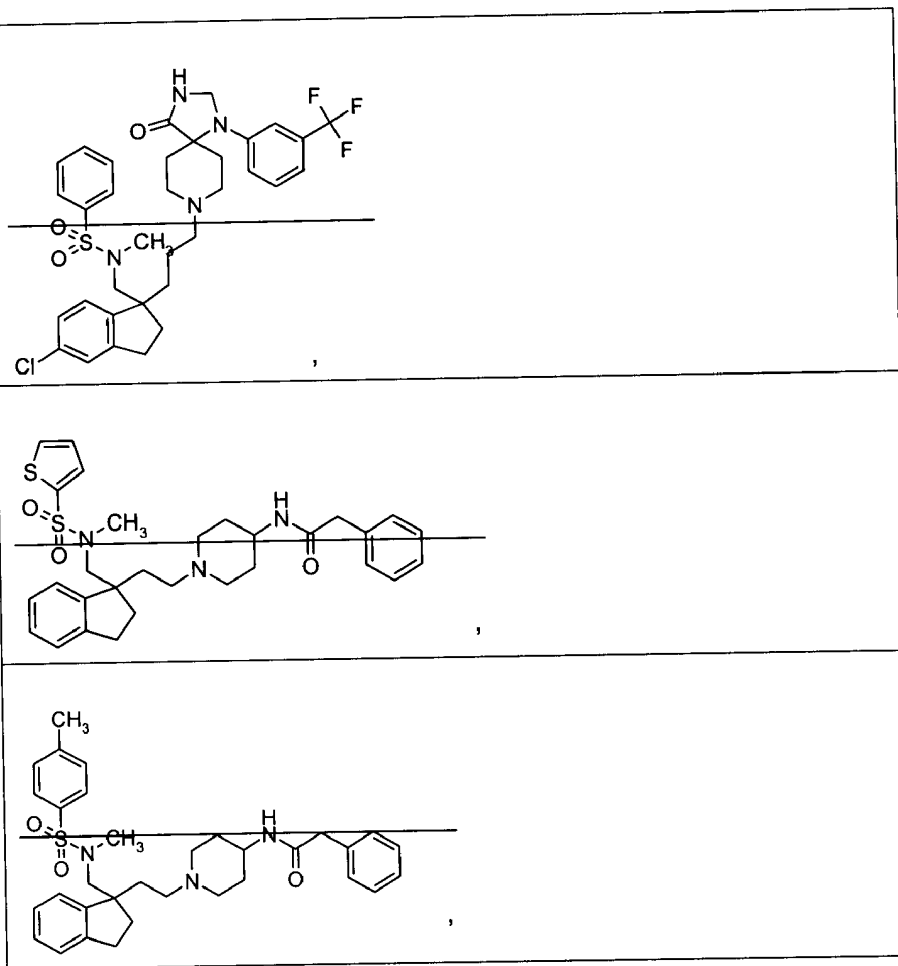
19. (Cancelled)

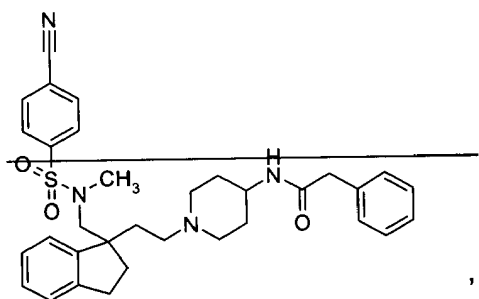
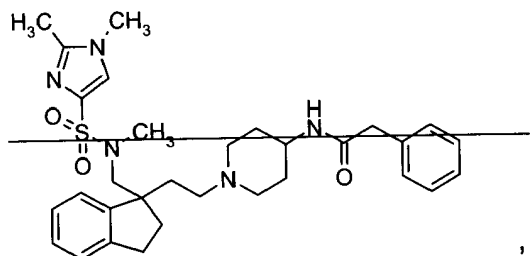
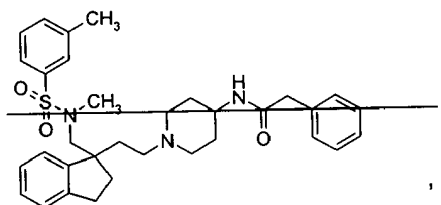
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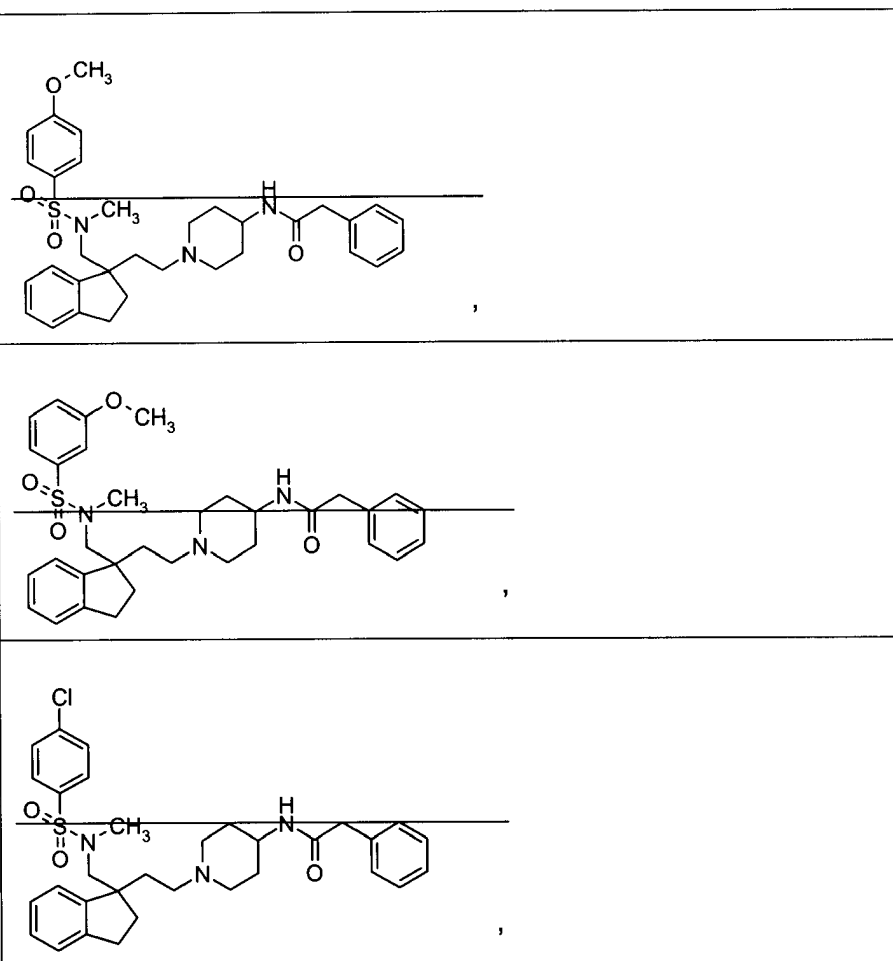
21. (Cancelled)

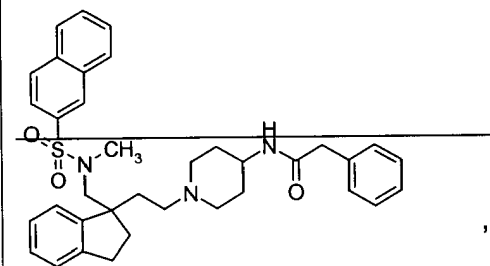
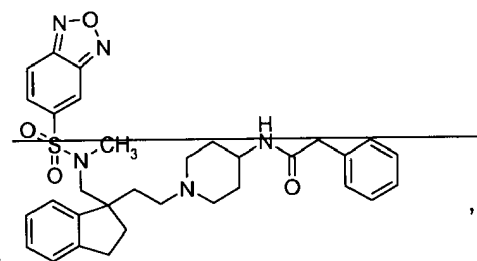
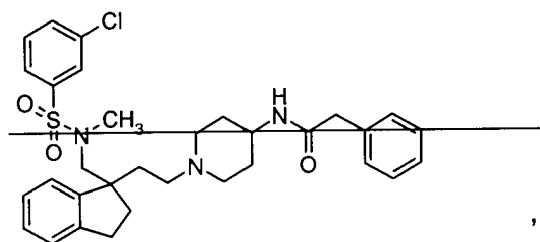
22. (Currently Amended) A compound or salt thereof selected from the group consisting of

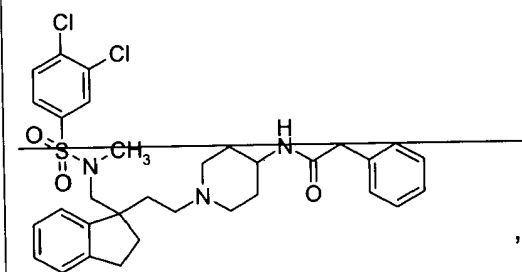
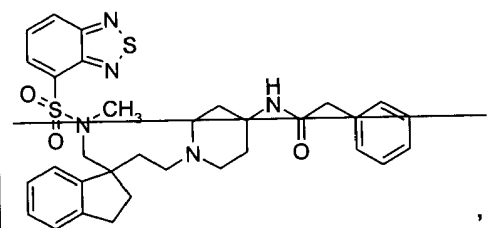
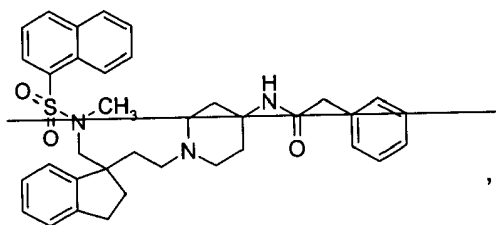


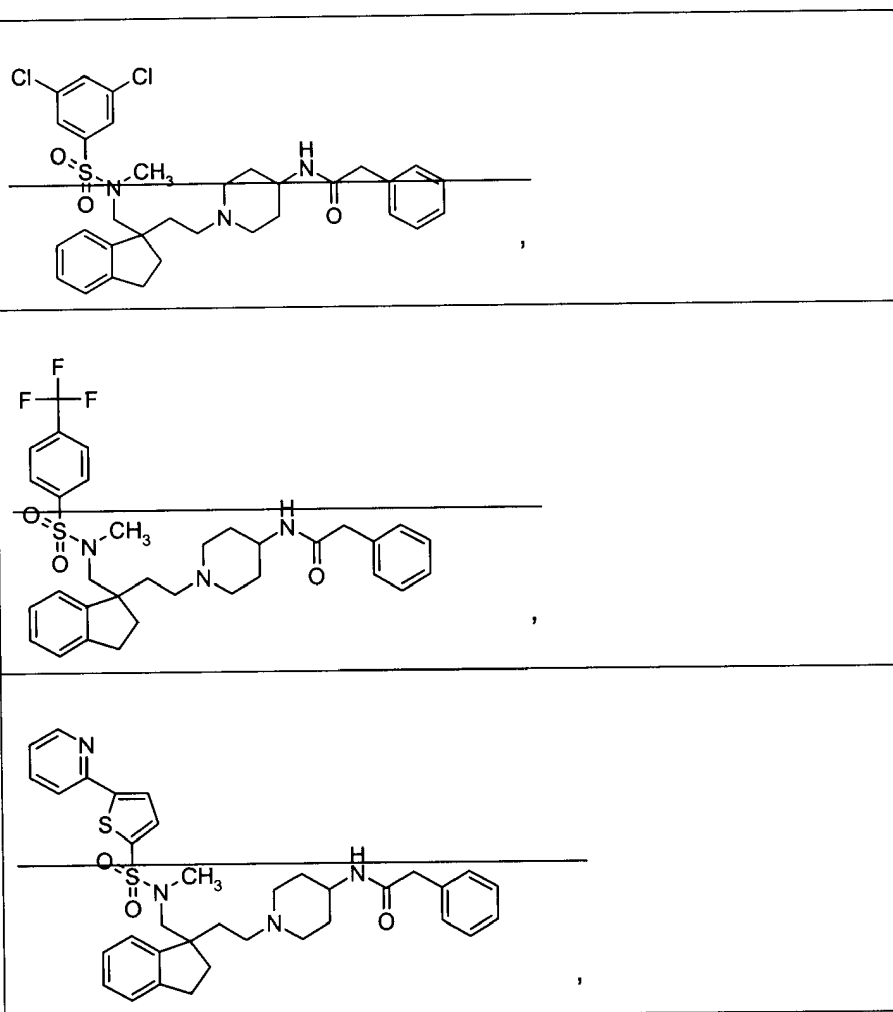


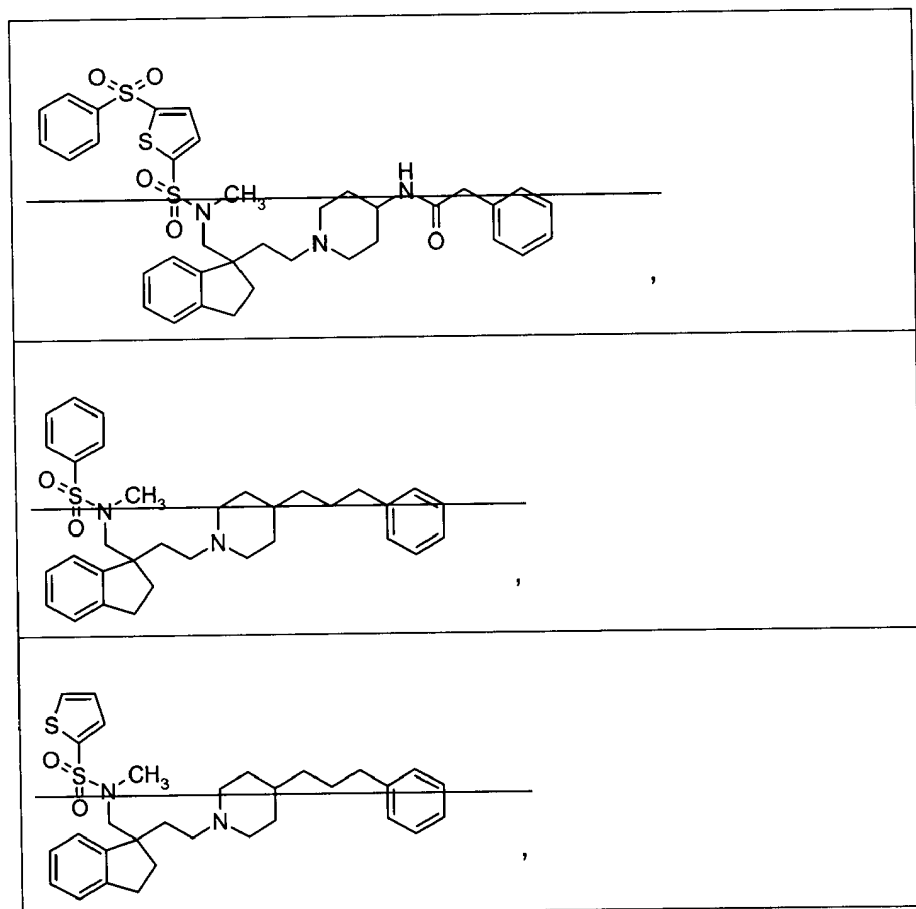


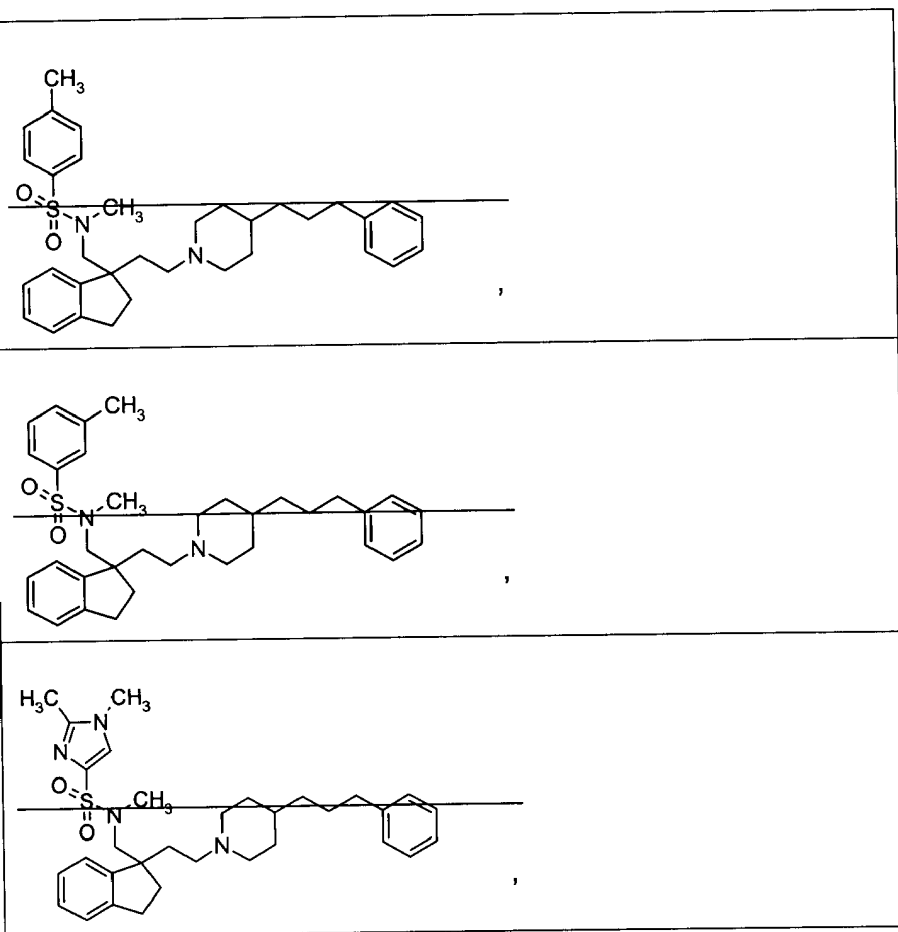


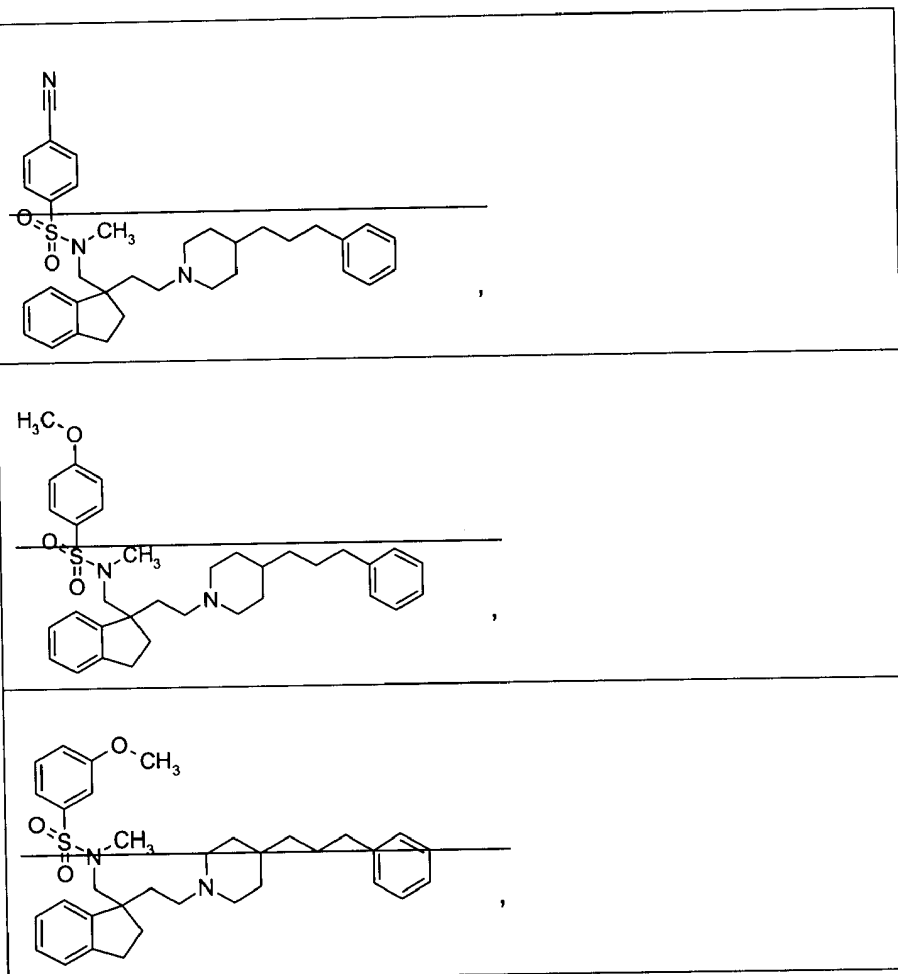


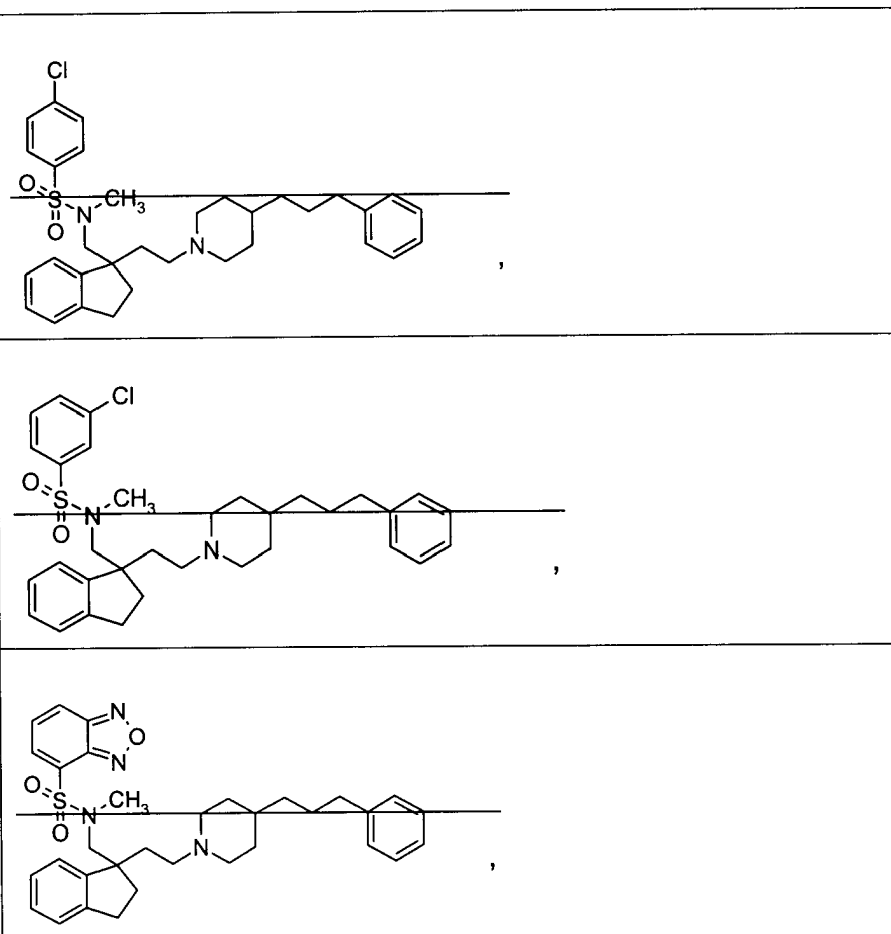


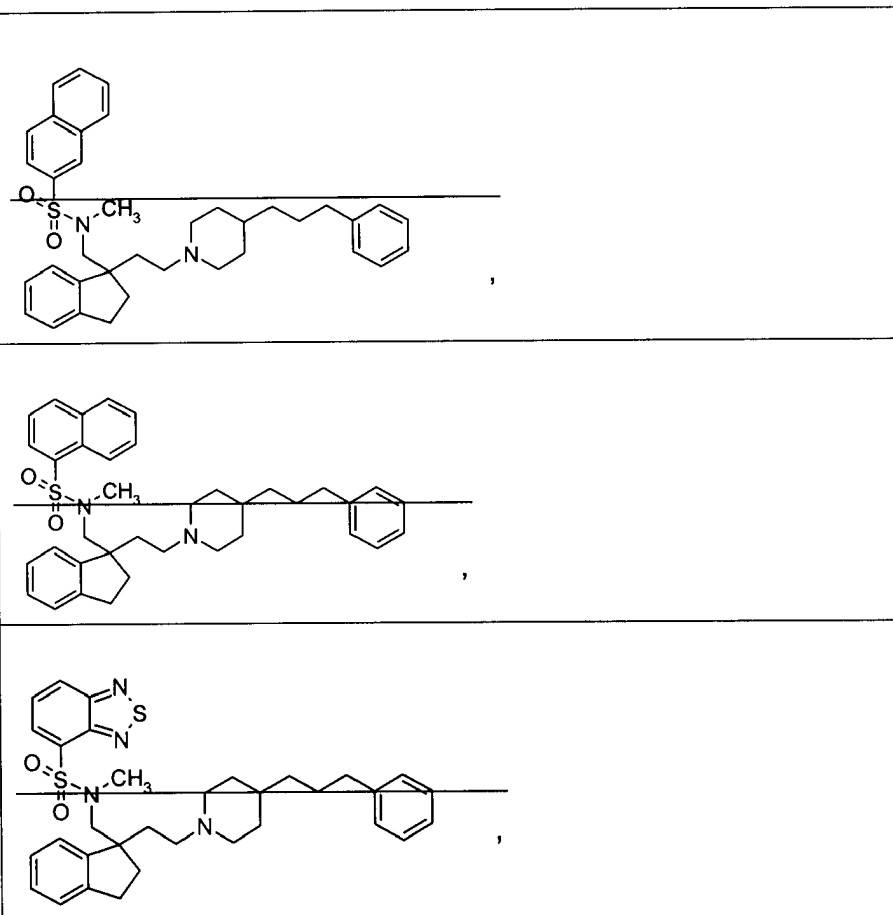


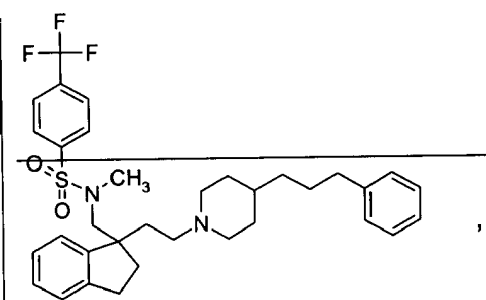
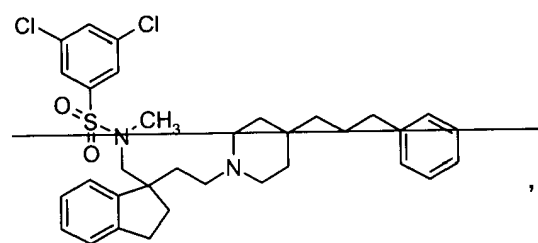
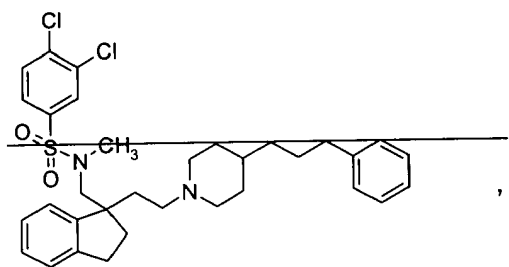


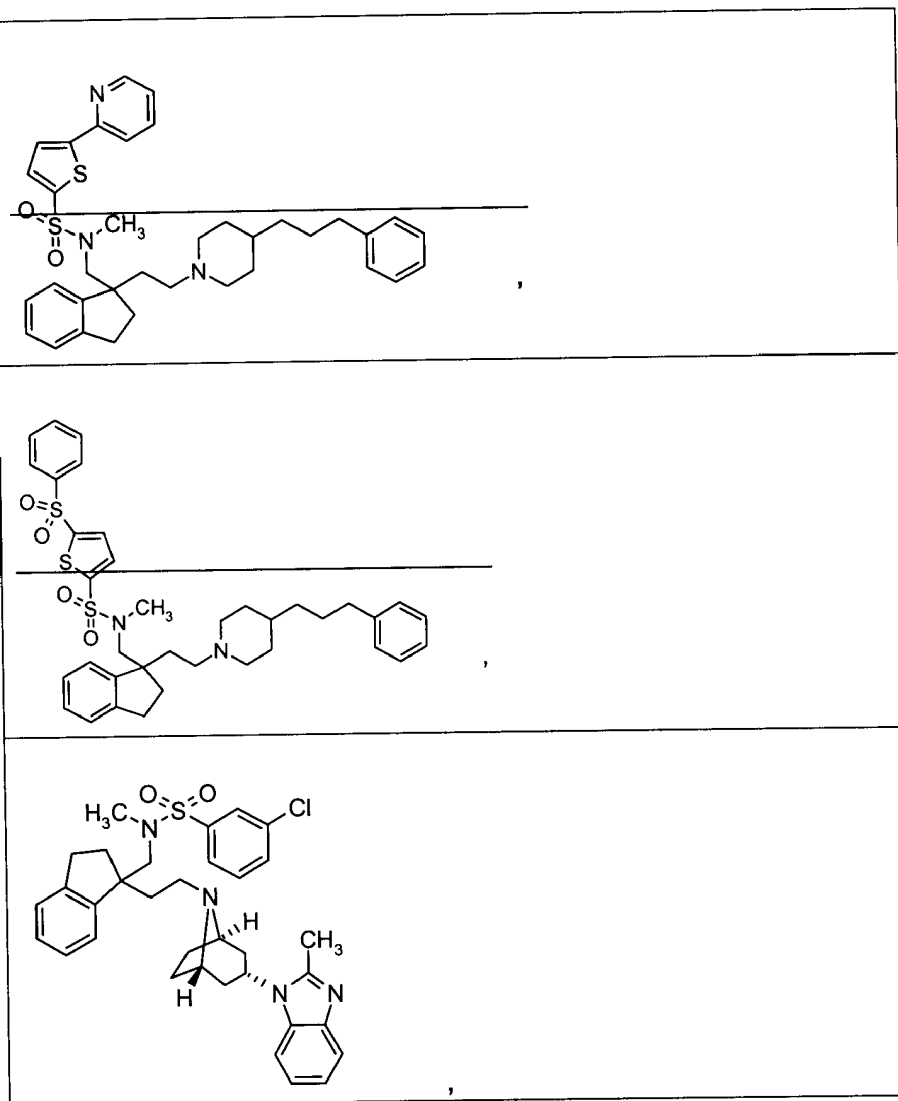


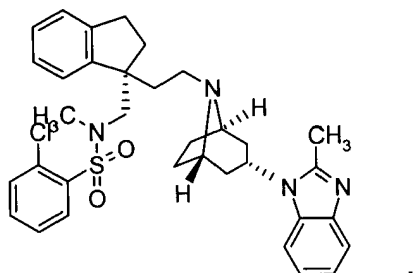
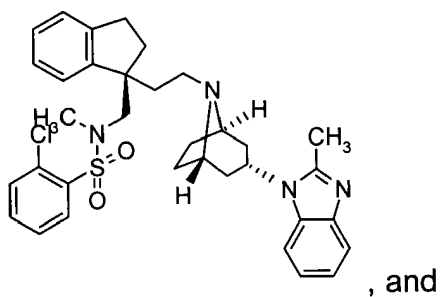
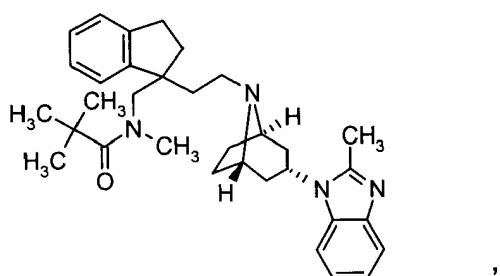
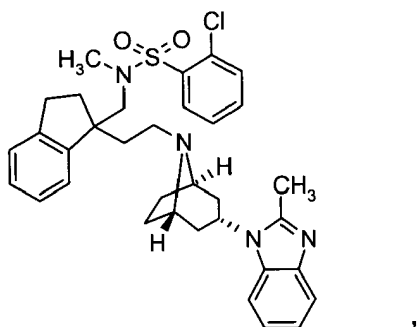












23. (Currently Amended) A method of treatment of a viral infection in a ~~mammal~~ human comprising administering to said ~~mammal~~ human an antiviral effective amount of a compound according to claim 1.

24. (Original) The method according to claim 23 wherein the viral infection is an HIV infection.

25. (Currently Amended) A method of treatment of a bacterial infection in a ~~mammal~~ human comprising administering to said ~~mammal~~ human an effective amount of a compound according to claim 1.

26. (Original) The method of claim 25 wherein the bacterium is *Yersinia pestis*.

27-33. (Cancelled)

34. (Previously Amended) A pharmaceutical composition comprising a pharmaceutically effective amount of a compound according to claim 1 together with a pharmaceutically acceptable carrier.

35. (Original) A pharmaceutical composition according to claim 34 in the form of a tablet or capsule.

36. (Original) A pharmaceutical composition according to claim 34 in the form of a liquid.

37. (Currently Amended) A method of treatment of a viral infection in a ~~mammal~~ human comprising administering to said ~~mammal~~ human a composition comprising a compound according to claim 1 and another therapeutic agent.

38. (Original) A method according to claim 37, wherein said composition comprises another therapeutic agent selected from the group consisting of (1- α , 2- β , 3- α)-9-[2,3-bis(hydroxymethyl)cyclobutyl]guanine [(-)BHCG, SQ-34514, lobucavir], 9-[(2R,3R,4S)-3,4-bis(hydroxymethyl)-2-oxetanosyl]adenine (oxetanocin-G), acyclic nucleosides, acyclovir, valaciclovir, famciclovir, ganciclovir, penciclovir, acyclic nucleoside phosphonates, (S)-1-(3-hydroxy-2-phosphonyl-

methoxypropyl)cytosine (HPMPC), [[[2-(6-amino-9H-purin-9-yl)ethoxy]methyl]phosphinylidene] bis(oxyethylene)-2,2-dimethylpropanoic acid (bis-POM PMEA, adefovir dipivoxil), [(1R)-2-(6-amino-9H-purin-9-yl)-1-methylethoxy]methyl]phosphonic acid (tenofovir), (R)-[[2-(6-Amino-9H-purin-9-yl)-1-methylethoxy]methyl]phosphonic acid bis-(isopropoxycarbonyloxymethyl)ester (bis-POC-PMMA), ribonucleotide reductase inhibitors, 2-acetylpyridine 5-[(2-chloroanilino)thiocarbonyl] thiocarbonohydrazone and hydroxyurea, nucleoside reverse transcriptase inhibitors, 3'-azido-3'-deoxythymidine (AZT, zidovudine), 2',3'-dideoxycytidine (ddC, zalcitabine), 2',3'-dideoxyadenosine, 2',3'-dideoxyinosine (ddI, didanosine), 2',3'-didehydrothymidine (d4T, stavudine), (-)-beta-D-2,6-diaminopurine dioxolane (DAPD), 3'-azido-2',3'-dideoxythymidine-5'-H-phosphonate (phosphonovir), 2'-deoxy-5-iodo-uridine (idoxuridine), (-)-cis-1-(2-hydroxymethyl)-1,3-oxathiolane 5-yl)-cytosine (lamivudine), cis-1-(2-(hydroxymethyl)-1,3-oxathiolan-5-yl)-5-fluorocytosine (FTC), 3'-deoxy-3'-fluorothymidine, 5-chloro-2',3'-dideoxy-3'-fluorouridine, (-)-cis-4-[2-amino-6-(cyclopropylamino)-9H-purin-9-yl]-2-cyclopentene-1-methanol (abacavir), 9-[4-hydroxy-2-(hydroxymethyl)but-1-yl]-guanine (H2G), ABT-606 (2HM-H2G) ribavirin, protease inhibitors, indinavir, ritonavir, nelfinavir, amprenavir, saquinavir, fosamprenavir, (R)-N-tert-butyl-3-[(2S,3S)-2-hydroxy-3-N-[(R)-2-N-(isoquinolin-5-yloxyacetyl)amino-3-methylthiopropionyl]amino-4-phenylbutanoyl]-5,5-dimethyl-1,3-thiazolidine-4-carboxamide (KNI-272), 4R-(4alpha,5alpha,6beta)-1,3-bis[(3-aminophenyl)methyl]hexahydro-5,6-dihydroxy-4,7-bis(phenylmethyl)-2H-1,3-diazepin-2-one dimethanesulfonate (mozenavir), 3-[1-[3-[2-(5-trifluoromethylpyridinyl)-sulfonylamino]phenyl]propyl]-4-hydroxy-6alpha-phenethyl-6beta-propyl-5,6-dihydro-2-pyranone (tipranavir), N'-[2(S)-Hydroxy-3(S)-[N-(methoxycarbonyl)-l-tert-leucylamino]-4-phenylbutyl-N-alpha-(methoxycarbonyl)-N'-[4-(2-pyridyl)benzyl]-L-tert-leucylhydrazide (BMS-232632), 3-(2(S)-Hydroxy-3(S)-(3-hydroxy-2-methylbenzamido)-4-phenylbutanoyl)-5,5-dimethyl-N-(2-methylbenzyl)thiazolidine-4(R)-carboxamide (AG-1776), N-(2(R)-hydroxy-1(S)-indanyl)-2(R)-phenyl-methyl-4(S)-hydroxy-5-(1-(1-(4-benzo[b]furanylmethyl)-2(S)-N'-(tert-butylcarboxamido)piperazinyl)pentanamide (MK-944A), interferons, α -

interferon, renal excretion inhibitors, probenecid, nucleoside transport inhibitors, dipyridamole, pentoxifylline, N-acetylcysteine (NAC), Procysteine, α -trichosanthin, phosphonoformic acid, immunomodulators, interleukin II, thymosin, granulocyte macrophage colony stimulating factors, erythropoietin, soluble CD₄ and genetically engineered derivatives thereof, non-nucleoside reverse transcriptase inhibitors (NNRTIs), nevirapine (BI-RG-587), alpha-((2-acetyl-5-methylphenyl)amino)-2,6-dichloro-benzeneacetamide (loviride), 1-[3-(isopropylamino)-2-pyridyl]-4-[5-(methanesulfonamido)-1H-indol-2-ylcarbonyl]piperazine monomethanesulfonate (delavirdine), (10R, 11S, 12S)-12-hydroxy-6, 6, 10, 11-tetramethyl-4-propyl-11,12-dihydro-2H, 6H, 10H-benzo(1, 2-b:3, 4-b':5, 6-b'')tripyrans-2-one ((+) calanolide A), (4S)-6-Chloro-4-[1E]-cyclopropylethenyl)-3,4-dihydro-4-(trifluoromethyl)-2(1H)-quinazolinone (DPC-083), (S)-6-chloro-4-(cyclopropylethynyl)-1,4-dihydro-4-(trifluoromethyl)-2H-3,1-benzoxazin-2-one (efavirenz, DMP 266), 1-(ethoxymethyl)-5-(1-methylethyl)-6-(phenylmethyl)-2,4(1H,3H)-pyrimidinedione (MKC-442), and 5-(3,5-dichlorophenyl)thio-4-isopropyl-1-(4-pyridyl)methyl-1H-imidazol-2-ylmethyl carbamate (capravirine), glycoprotein 120 antagonists, PRO-2000, PRO-542, 1,4-bis[3-[(2, 4-dichlorophenyl)carbonylamino]-2-oxo-5,8-disodiumsulfanyl]naphthalyl-2, 5-dimethoxyphenyl-1, 4-dihydrazone (FP-21399), cytokine antagonists, reticulose (Product-R), 1,1'-azobis-formamide (ADA), 1,11-(1,4-phenylenebis(methylene))bis-1,4,8,11-tetraazacyclotetradecane octahydrochloride (AMD-3100), integrase inhibitors, and fusion inhibitors.

39. (Currently Amended) A method of treatment of a viral infection in a ~~mammal~~ human comprising administering to said ~~mammal~~ human a composition comprising a compound according to claim 1 and ritonavir.